

This listing of claims is provided for the Examiner's convenience. No claims have been amended, added or cancelled herein.

Listing of Claims:

1. (Previously presented) An apparatus for use in a mobile communication system that simultaneously transmits a control message over a control channel and data over a data channel, wherein the apparatus supports hybrid automatic repeat request (HARQ), the apparatus comprising:

a physical layer for receiving the control message and the data from the control channel and the data channel respectively and for decoding the received control message and data;

a physical layer's HARQ controller for processing a result of the decoding of at least one of the received control message and data and for controlling the physical layer according to a result of the processing.

2. (Previously presented) The apparatus of claim 1, wherein the physical layer's HARQ controller comprises:

at least one HARQ state machine for controlling a state transition among a plurality of states, wherein the plurality of states includes an initial state for initializing parameters while waiting for the control message to be received over the control channel, a control message decoding state for decoding the control message, a control state for calculating a result of the control message decoding, a demodulation state for demodulating the received data, a data decoding state for turbo decoding the demodulated data, and a response state for transmitting a response based on a result of the turbo decoding; and

a state function section for controlling the state transition of the at least one HARQ state machine depending on the result of the processing.

3. (Previously presented) The apparatus of claim 1, further comprising a data path processor for controlling a processing path of data received over the data channel.

4. (Previously presented) The apparatus of claim 1, further comprising an output buffer controller for storing data obtained by demodulating and decoding data received over the data channel and outputting the stored data to the HARQ controller.

5. (Previously presented) The apparatus of claim 2, wherein the at least one HARQ state machine comprises two HARQ state machines.

6. (Previously presented) The apparatus of claim 5, wherein an amount of delay for the response comprises 2 slots, wherein each of the two HARQ state machines alternately controls the state transition for 2 slots for the data received over the data channel.

7. (Previously presented) The apparatus of claim 6, wherein when decoding the data in the physical layer, the two HARQ state machines control a transition to a waiting state until a previous decoding operation of the decoder has ended.

8. (Previously presented) The apparatus of claim 7, wherein the state function section comprises:

first state processors for performing control operations of the two HARQ state machines in the initial state;

a second state processor for performing control operations of the HARQ state machines in the control state;

a third state processor for performing control operations of the HARQ state machines in the demodulation state;

a fourth state processor for performing control operations of the HARQ state machines in the waiting state;

a fifth state processor for performing control operations of the HARQ state machines in the decoding state; and
sixths state processors for performing control operations of the associated two HARQ state machines in the response state.

9. (Original) The apparatus of claim 1, wherein the physical layer comprises one data channel turbo decoder.

10. (Previously presented) The apparatus of claim 1, wherein the data channel is decoded by a turbo decoder.

11. (Previously presented) The apparatus of claim 1, wherein the physical layer's HARQ controller requests a retransmission of the data from the mobile communication system when results of the decoding of the data indicate that the decoding was unsuccessful.

12. (Previously presented) The apparatus of claim 1, wherein the physical layer's HARQ controller transmits the decoded data to an upper layer when results of the decoding of the data indicate that the decoding was successful.

13. (Previously presented) The apparatus of claim 1, wherein the physical layer comprises a control channel decoder for decoding the received control messages, a demodulator for demodulating the received data, and a data decoder for decoding the demodulated data.

14. (Previously presented) The apparatus of claim 13, wherein the physical layer's HARQ controller determines whether to demodulate the data depending on the decoded control message and outputs the decoded control message to the demodulator and the data decoder when the HARQ controller determines to demodulate the data.

15. (Previously presented) The apparatus of claim 1, wherein the physical layer's HARQ controller determines whether to demodulate the data depending on the processed result and outputs the result of the decoded control message to the physical layer when the HARQ controller determines to demodulate the data.

16. (Previously presented) The apparatus of claim 1, wherein the physical layer's HARQ controller determines whether to demodulate and decode the received data depending on the result of the decoding of the control message, outputs the decoded control message to the demodulator and the decoder during demodulation, decoding the received data, and controlling the output of a response signal according to the result of the decoding of the data.

17. (Previously presented) The apparatus of claim 1, wherein the physical layer's HARQ controller delivers the decoded data to the upper layer.